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XIII.—*Some Changes of Surface affecting Ancient Ethnography.*
By H. H. HOWORTH, Esq., F.E.S.

[*Read March 24th, 1868.*]

THE inquiry into the earlier ethnography of a country is beset with many discouraging difficulties. We cannot hope to obtain the same fixed results that attend the researches into an experimental science, and our conclusions are often but tentative opinions resting on a narrow induction. Our facts are meagre and ambiguous, and the best theory but the resultant of a maze of conflicting evidence, which becomes naturally more puzzling as we recede into the distance of time. It is something in such an inquiry to gain a firm foothold anywhere, and if we consider how many fresh points of view we may obtain from unexpected quarters sometimes, and how strangely fruitful some apparently uninviting questions have proved, the following dry paper may perhaps be excused. The Northern hive was a favourite phrase with the rhetorical historians of the last century. In its unexplored depths a ready resource was at hand for those who were content to confine their criticism to the pale of the Roman world, and who took small interest in the country beyond the Rhine and the Danube, except in the few transactions it held with the centres of culture. It is not to be wondered at, therefore, that men should now have quarrelled with many of the once orthodox theories about the outer barbarians, and that a closer anatomy has made us sceptical of old opinions. Among these we may include, the capacity possessed by a cold, bare, hungry, and now sparsely peopled country to be the overcharged hive which could, at convenient intervals, reinvigorate the enervated blood of an overcivilised and luxurious race, and at the same time relieve itself of a pressure on its food-producing powers. Buckle is not now alone in doubting the fecundity of a race placed under the conditions we now find in Scandinavia.

Before dogmatising, however, on the subject, it is convenient that we should ascertain that these conditions have not materially altered, and the inquiry may take a somewhat wider range than the area of Scandinavia, and be made to disclose some important matter. We will commence with that region. It is well known that the Roman geographers give us an account of Scandinavia which cannot be reconciled with its present con-

tour. It is equally well known that among the patrons of Pliny and Tacitus there are not a few who at once explain this difference by good-naturedly charging the ancients with mistakes and carelessness. It is argued that the Romans knew little of the country beyond the Elbe. Although they were large consumers of amber, which must have come from the shores of Prussia; although the masters of a maritime skill and enterprise which enabled them to sail round the British Isles, and to coast the distant shores of the Bight of Benin; and although the focus of all the merchandise and traffic of the world, the goal of caravans, of travellers, and of merchants, they were yet so incurious or so ignorant as to make the most lamentable blunders about a very neighbouring region to their homes. It is perhaps a pardonable heterodoxy which refuses to accept such a view, maintained chiefly, as I observed, by those whose superior stand-point enables them to patronise more primitive inquirers. The very modesty with which these ancients parade their ignorance makes me attach greater credit to what they relate.

Pytheas of Marseilles, in his questionable narrative, gives us little about the extreme north of Europe save the name Thule, which is evidently from the context meant for the Scandinavian peninsula, a part of which was afterwards known as Thylemark. He names however an island which he calls Abalus. This Pliny identifies with the Basilia of Timæus. In another place, quoting Xenophon of Lampsacus, Pliny says that at a distance of three days' sail from Scythia there is an island of immense size called Baltia, the same Pytheas names Basilia. This confusion of names in Pytheas is only partially explained by Zeuss in his *Die Deutsche und die Nachbarstämme*; a book which deserves translation, and which, if this Society were to begin a series of translations of ethnological classics, I should recommend for the honour of heading the list. The account of Pliny is given almost in the same terms by Solinus, c. 22.

Again, in another place, Pliny says, "the Codinian Gulf is filled with islands, the most famous of which is Scandinavia, of a magnitude as yet unascertained. The only portion at all known is inhabited by the Hilleviones, who dwell in five hundred villages, and call it a second world. It is generally supposed that the island of Eningia is not of less size." This "Sinus Codanus" is also mentioned by Mela, together with the large island of Codanonia, inhabited by the Teutones.

Ptolemy speaks of four islands east of the Cimbric peninsula, which he calls the Scandian Islands, of which the largest and most easterly is Scandia, extending as far as the mouth of the Vistula. He places several tribes on his large Scandinavian island.

Procopius, writing A.D. 526 to 565, and perhaps only repeating a traditional knowledge, mentions Scandinavia, under the name of Thule, as an island ten times larger than Britain.

From these accounts, in some of which, perhaps, the larger Danish islands are confused with the main land, it is clear that the ancient notion of Scandinavia is that of a large group of islands, a northern Archipelago. If their evidence is to be trusted, the relative proportions of land and water must have altered since it was collected. This practically means that the land must have risen very considerably in the interval. Modern observation has confirmed the fact of such a rise. It discloses to us the gradual rise of the sea bottom of the Baltic and a consequent accretion of land to its shores. It is no new discovery. Celsius, who wrote at the end of the seventeenth century, from the evidence of pilots and others, had concluded that there was a change of level in progress in the Northern Ocean amounting to forty inches in a century. Playfair, in 1802, showed that this must be by the rise of the land. In 1807, Von Buch wrote that all the country from Frederickstadt, in Sweden, to Abo, in Finland, and, perhaps, as far as St. Petersburg, was slowly rising. In 1820 and 1821, a report was presented to the Royal Academy of Stockholm, by the officers of the pilotage service, of their examination of several lead marks cut at several dates on different rocks. From this report it appeared that along the whole coast of the northern part of the Gulf of Bothnia the water was lower than formerly, but that the rate of recession was not uniform. New marks were, at the same time, made. In 1834, Sir Charles Lyell made an elaborate examination of the whole subject, which he published as the Bakerian lecture in the *Philosophical Transactions*. He visited the whole seaboard, and became a perfect convert in consequence to a view which he had previously combated. To this report I am indebted for some of the foregoing facts. In Scania, and in Denmark, he found little evidence of any perceptible change of level, unless it were that of the land sinking. The first unmistakeable evidence was found at Calmar, in 56 deg. 41 min. N. lat. The foundations of the castle there, which had originally been subaqueous, were found to have risen four feet in four centuries. At Stockholm there were found striking proofs of change since the Baltic acquired its present tenants. Testacea found there seventy feet above the sea-level, being identical with those now found in the adjacent sea. At Soderleige, a little further south, and in a bed ninety feet above the sea level, besides the shells were found several buried vessels. These were constructed with wooden pegs. In another place an iron anchor and nails were found. In another, sixty-four

feet below the surface (and apparently showing a great submergence and subsequent upheaval) was found a hut with charred wood on its hearth.

The three lakes of Husar, Ladu, and Uggel, which formerly, *temp.* Charles XI, constituted the Gulf of Fiskartorp, had grown much shallower and in part become dry land. At Upsala, forty miles north north-west of Stockholm, brackish water plants were found in meadows where there are no salt springs. This is abundant proof that the sea has but recently retired. The march at Oregrund, forty miles north of Upsala, had risen five inches and a half in the interval since 1820. At Gefle, forty miles to the north-west, are low pastures where the inhabitants' fathers remembered boats, and even ships, floating. Similar traditions are common in Finland. Experienced pilots in the Gulf of Bothnia estimated the fall of the waters at two feet in thirty years. The extracts from this paper might be multiplied.

In the sixth volume of the *Geological Transactions*, is a short paper by G. Forchhammer, who, speaking of the neighbourhood of Denmark, says the island of Saltholm, opposite Copenhagen, mentioned for fertility in the thirteenth century, is now hardly five feet above the sea level, and almost every autumn is overflowed by the sea. Pomholm rises a foot in a century. It is reported among the inhabitants that Heligoland has been reduced within a century from eleven miles to one, and the Danish peat bogs bear general witness to a depression there going on. In 1853, Sir Charles Lyell summed up the results then obtained. He says, "the known limits of elevation are Gothenburg and Tornea, and thence to the North Cape. In breadth it may extend far into Sweden and Finland." In the northern part of Norway recent swells occur, according to Strön, four hundred feet above the sea level; and along the whole coast such evidence, coupled with that of tradition, is too common to be fortuitous, and it is overwhelmingly conclusive that the rise is not uniform, but increases in rapidity with the latitude. Beyond the limits of Scandinavia we find Mr. Lamont, in the eighteenth volume of the *Quarterly Journal of the Geological Society*, describing his summer's visit to Spitzbergen in 1858 and 1859, and stating that he discovered recent bones and drift-wood several miles inland and high above high water mark, skeletons of whales thirty to forty feet above the sea level. The seal-fishers told him the land was rising, and that the seas thereabouts were now too shallow for the right whale, which had forsaken the Spitzbergen coast.

To the east of Scandinavia we find in the surface of Finland all the characteristics of a recently emerged land, known to the

natives as Suomenia, or the land of swamps; it is sprinkled all over with lakes, separated by flats of sand covered with moss. The level of some of these lakes is rapidly falling, which means that the land is rising, and, *inter alia*, we have detailed accounts of the sudden lowering of Lake Souvando in 1818, and of the escape of its waters into Lake Ladoga, exposing much of its bottom as dry banks. Having shown how general the evidence of upheaval is in the north, we will now shift our view to a distant neighbourhood, which has, however, very near ties with it in an ethnographic point of view.

The ancient geography of Central Asia is no less a puzzle to modern inquirers than that of Scandinavia. Proofs are accumulating on all hands to show how very recent is the separation of the Euxine, Caspian, and Aral. The occurrence of the seal and the sturgeon in these separate seas is sufficient evidence for the naturalist, and the gradual lowering of the waters of the Caspian and the Sea of Aral is matter of notoriety to the physical geographer. The Caspian and the Sea of Aral form two large hollows in a low monotonous plain connected together by a string of salt lakes and brackish pools, and threaded with the winding beds of dried channels, formerly the course of the Oxus and other rivers. North of the Caspian is a continuation of the same picture, hence a broad deeply-indented track of country similarly studded with lakes, connects the Caspian with the Obi, and thus with the Arctic Sea. Pallas, an old but a most safe authority, one of the most careful and observant of travellers, and certainly the first of authorities for the country surrounding the lower waters of the Volga and the Don, gives us vivid pictures of the salt-sown deserts which mark the area of the ancient sea. He tells us, "the Yackian (?) desert, as well as those of the Kalmuchs and the Volga, are covered with shells exactly like those now found in the Caspian. The soil is of a uniform consistence of sand and a yellowish loam, generally impregnated with sea salt, and there is no black soil or turf." In another place, "It is probable that the high country between the Don and the Volga, and along the Sarpa, as well as the heights between the Volga and the Yach, now called Obisher (?) Sert, have been the old banks of the Hyrcanean Sea, for here we meet with horizontal strata, no salt, and plenty of soil and turf. Further up in the mountains are banks of shells, but not like those now found in the Caspian."

"The desert is fifteen fathoms higher than the Caspian, but then the Caspian is itself very low, and the current of the Don is visibly ten fathoms higher than that of the Volga, even when they flow close to one another." Again—"Very probably, nay beyond a doubt, the low country of Ulagami, Ternik, Alabuga,

and Bycloe, is the old bed of the strait uniting the Caspian and the Sea of Azof. Even to this day, the Caspian, when swelled by tempests, easily overflows the low countries just mentioned. The sand hills which intervene between them and the many isles originate from sand banks thrown up by the Caspian. These banks have choked up the mouth of the Kuma, which formerly had a free passage into the Caspian.

“The Don seems, in the days when the Caspian was one with the Black Sea, to have fallen into the sea close to Donetz, the Volga, in the vicinity of Duntrefsk.”

These observations of Pallas lead us to attach more credit to ancient accounts of these districts.

It is well known that from the days of Herodotus to very recent times the Caspian and the Sea of Aral were made one by geographers, the usual explanation being that, in the absence of knowledge about this district, one copied from another. In the time of the earlier geographers this junction was probably perfect, the Araxes then flowed into the joint lakes. We notice a stage of desiccation in a statement of Priscus, who accompanied the embassy of Theodosius to Attila, and who mentions the fact that the Huns, in invading Persia, crossed first a steppe, then a *morass*, and lastly the mountains.

Hecataeus supposed the Caspian to be connected with the Euxine by means of the River Phasis.

Strabo refers to this notion as one invented by the geographers of Alexander's expedition, but he himself affords evidence in the size he gives the Mæotis of its probable extension as far east as the mouths of the Volga in earlier days. Polybius even foretold, from changes going on in his day, that it would be speedily choked. Scylax makes it one half the size of the Euxine. Herodotus still larger. The evidence comes down to our own time; for the map of the Mæotis, drawn up by the Russians in 1773, shews, we are told, many banks and tongues of land which are constantly appearing in it. What took place here no doubt occurred also in the low salt marshes of the Volga. It is well known that the ancients connected the Caspian with the Polar Sea. I will only refer to Strabo, who gives us a very detailed account of the neighbourhood of the former sea, and distinctly in the sixth and eighth chapters of his eleventh book, makes it a gulf of the latter one, narrow at its *emboûchure* and widening southwards.

We will shift our ground once more, and this time to the South and West of Scandinavia, to the coasts of the German Ocean and the British seas. If Denmark has been suspected to be stationary, if not slowly sinking, there can be no doubt that the sea has been incroaching further south. The Dollart,

the large bay between Groningen and East Friesland, was formed in 1277, and greatly extended in the three following years, one town, thirty-five villages, and several hamlets being overwhelmed. The Zuyder Zee was formerly almost a fresh water lake, communicating by two channels with the North Sea. By several huge incroachments, as in 1230, when one hundred thousand men perished; 1287, when eighty thousand are said to have been destroyed, these channels of communication were multiplied. In 1395, great ships could sail to Amsterdam. In 1470, 40,000 men were drowned, chiefly in Friesland, and in 1570, an equal number in that province, the water rising six feet above the dykes, in 1686 it rose eight feet above the dykes, and converted Friesland into a sea; in 1717, another great flood laid the town of Groningen several feet under water, and destroyed 12,000 men. The Zuyder Zee is now eighty miles long, and from twenty to forty broad. It includes, however, the large Pampas bank and numerous shallows. The history of this coast, therefore, has been the history of the continuous incroachment of the sea, and the time is not far distant when the string of islands which now form such a curious fringe to the coast of Holland, and extend from Texel to the little island of Norderney, was a portion of the mainland. The wearing of the opposite coasts of Norfolk and Yorkshire is very notorious, whole villages and towns have disappeared. We have all heard of the tradition about the Goodwin sands, and although doubts have been cast on the circumstances of the story, there can be few who will doubt that at a not very remotely earlier date than the traditional one, these high banks of sand formed part of an abutment of Kent, and that consequently the coasts of England and Holland were much nearer one another.

If we now go further west, we find the French coast fringed with submerged land, in which are the remains of buildings and works of art. Similar buildings exist in the submerged forest of St. Ouen, off Jersey. Captain White, who surveyed this part of the Channel, describes long lines running along the bottom of the sea, evidently artificial, and probably similar to those mentioned by Borlase about the Scilly Isles, locally called hedges, *i.e.*, ancient stone walls, which the latter says are often seen upon the shifting of the sand in the firths between the islands. Captain White saw stumps of trees both on the French coast and that of Jersey, sixty feet below high water mark. He says the summit of one of the seven half-submerged rocks between Scilly and the mainland has been levelled by art, and he dredged up there part of the leaden astragal of a window. Even in Camden's day remains of houses had been

hooked up here. He tells us the space within the stones was known to the Cornish as Tregva, or the dwelling. He also mentions the tradition that a large extension of the land known to the natives as Lionese, had been drowned within the historic period. I do not say that these facts warrant our saying that these border lands of the Channel are now sinking, for it may be that the gradual rise further north has increased the volume of the water on other coasts. They do warrant, however, our stating that everywhere where we have examined the question we find changes of the relative proportions of sea and land going on.

I think I have adduced sufficient evidence to prove the fact that from the western shores of England to the desert of Thibet the relative height of the land, and with it the relative proportion of water has been undergoing great alteration since the times of the ancients. The rate of this elevation now becomes of considerable consequence. In the north there is evidence to show that it has not been uniformly progressive. In many places, as also is the case in Scotland, the land rises in a series of plateaux. These are susceptible of two explanations. One adopted by Sir Charles Lyell, that intervals of gradual elevation, have been succeeded by intervals of quiescence, and that the steps, in fact, mark halting stages in the progress. For this view I know of no evidence. It accords well with the anti-cataclysmatic crusade of some modern geologists, but is supported by no facts. Another explanation, which I confess I have the weakness to prefer, is that at intervals the land has risen with an actual jump or start, which has been followed by another interval of normal rise. The extent of the uprising being measured by the depth between any two plateaux. This view is supported amply by what Darwin tells us of the western coast of South America, a country like the Scandinavian peninsula and Scotland, having a huge boss of mountains close at hand, and subject to frequent earthquakes. Among other instances, I will name the island of Lemiro, in the Chonos Archipelago, which was suddenly elevated by an earthquake in 1839. A part of the island of Chiloe rose four feet in four years. The island of Mocha, seventy miles north of Valdivia, was uplifted two feet during an earthquake in 1835. At Valparaiso, there had been a rising of the land of nineteen feet and a half between 1614 and 1834, of which between ten and eleven feet appeared subsequent to 1811. In 1822, an earthquake caused three feet of this to rise at once. The finding of boats, etc., in Sweden, in a high beach, is also paralleled here, for Darwin relates his discovery of a piece of woven rushes, and another of nearly decayed cotton string, undistin-

guishable from similar things found in the ancient Peruvian cemeteries, in a bed of shells, two feet thick, eighty-five feet above the sea level, in the island of San Lorenzo, off Lima, apparently proving that a rise to this extent had occurred there since the Indians inhabited the country.

We have traditions of sudden eruptions of the sea on the Pomeranian coast as well as those previously referred to in Holland, which seem to point to periods of exceptional vigour in the uprising of the sea bottom. The emigration of the Cimbri from their homes was explained by them, as recorded in Strabo, by a sudden bursting in of the sea.

In the fifth chapter of the *Ynglinga Saga*, as given in Mr. Laing's translation of the *Heimskringla*, is a wild legend of the days of Odin, in which such a convulsion seems to be dimly hinted at, as noted by the learned editor, a convulsion in which the island of Sealand rose from the waters.

Lumps of an asphaltic nature are sometimes found thrown up on the shores of the Bothnian Gulf, which point to similar underground activity. Geologists have remarked how very local and violent the elevation of the Norwegian mountains must have been to have left the Swedish strata so horizontal as we find them. Sir Charles Lyell calculates four feet in a century as the greatest rate of change in the focus of the country he examined. I willingly accept this as the normal rate, but add, in addition to it, sudden elevations of varying intensity.

With these facts before us, we have only to examine the lowlands of Sweden, Finland, and Russia to find how much of their surface would be laid under water by a comparatively small rise in the land. In Sweden 114,500 square miles are of less elevation than 300 feet above the sea level. The whole of North East Sweden is a flat alluvial plain, dotted with lakes bounded by the low mountains of Swedish Lapland, which no doubt, within a recent period, formed a rampart to the sea. Finland is described as sprinkled all over with lakes, separated by flats of sand, and studded with low hills. The centre of Finland consists of a low plateau of from 300 to 600 feet of elevation, and trending downwards to the White Sea, it has all the appearance of having lately emerged from the water which once separated Scandinavia from the mainland.

The effect of a subsidence of the land, even to a small extent, in the Southern area I have described I cannot do better than transcribe from Lyell's account. He says :—"Let us take another example from a part of the globe which is at present liable to suffer by earthquakes, namely the low sandy tract which intervenes between the Sea of Azof and the Caspian.

If there should occur a sinking down to a trifling amount, and such ravines should be formed as might be produced by a few earthquakes not more considerable than have fallen within our limited observation during the last one hundred and fifty years, the waters of the Sea of Azof would pour rapidly into the Caspian. * * * The Sea of Azof would immediately borrow from the Black Sea, that sea again from the Mediterranean, and the Mediterranean from the Atlantic, so that an inexhaustible current would pour down into the low tracts of Asia, bordering the Caspian, by which all the sandy Steppes bordering that sea would be inundated, an area of several thousand leagues, now below the level of the Mediterranean, would be converted from land into sea."

That such mighty effects have occurred within the limits of history I should not be bold enough to assert, though I venture to think that in the romantic legends which have come down to us from the earlier frontiers of history, in the legend of the deluge of Ogyges among the Greeks, and in similar legends among the Chinese, we have traces of some such catastrophe. It is enough for me to have shown how much we must alter our map if we are to picture the surface of the Caspian shore as it was in the days of Herodotus, and if we are to criticise the father of history with justice. Enough for me to have adduced some facts to cast at the glib correctors of so-called ancient geographical fables. I confess to a weakness for those fables, and more I feel, and I appeal to every one in the room who has dipped his net into the weed-choked river of ancient European ethnography, if it be not impossible to attempt to drag out of it aught save confusion until we have settled the relations of its physical character. This is the border land of archæology and geology. It has been left too much to the students of the latter science. We must stretch further—we must bring light to bear from more distant sources—if we are to escape the sneers aimed at our science as one affording more exercise to the imagination than to the reason. To hypothecate is simple enough in a field like ours ; to prove is a more heavy and harassing duty. I claim your very great indulgence for this dry paper. I am but a young fisherman ; I have dipped but into a corner of a most confused sea. With your permission and with all humility I hope to drag it through and through sometime.
